

# Product Specification

## Manganese ICP-MS Standard, 1000 ppm Mn in 3% HNO<sub>3</sub>

**Lot Number:** SAMPLE

**Product Number:** MSMN1KN

**Manufacture Date:** N/A

**Expiration Date:** N/A

The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3142. All trace level elements were determined by ICP or ICP-MS.

| Name                           | CAS#      | Grade           |
|--------------------------------|-----------|-----------------|
| Water                          | 7732-18-5 | ACS/ASTM/USP/EP |
| Nitric Acid                    | 7697-37-2 | Trace Metals    |
| Manganese Acetate Tetrahydrate | 6156-78-1 | High Purity     |

| Test                                | Specification    | Result | NIST SRM# |
|-------------------------------------|------------------|--------|-----------|
| Appearance                          | Colorless liquid | N/A    |           |
| Assay (vs. EDTA/Eriochrome Black T) | 997-1003 ppm Mn  | N/A    | 915       |

### Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

|                 |     |                   |     |                |     |
|-----------------|-----|-------------------|-----|----------------|-----|
| Aluminum (Al)   | N/A | Lutetium (Lu)     | N/A | Thorium (Th)   | N/A |
| Antimony (Sb)   | N/A | Magnesium (Mg)    | N/A | Thulium (Tm)   | N/A |
| Arsenic (As)    | N/A | Mercury (Hg)      | N/A | Tin (Sn)       | N/A |
| Barium (Ba)     | N/A | Molybdenum (Mo)   | N/A | Titanium (Ti)  | N/A |
| Beryllium (Be)  | N/A | Neodymium (Nd)    | N/A | Tungsten (W)   | N/A |
| Bismuth (Bi)    | N/A | Nickel (Ni)       | N/A | Uranium (U)    | N/A |
| Boron (B)       | N/A | Niobium (Nb)      | N/A | Vanadium (V)   | N/A |
| Cadmium (Cd)    | N/A | Osmium (Os)       | N/A | Ytterbium (Yb) | N/A |
| Calcium (Ca)    | N/A | Palladium (Pd)    | N/A | Yttrium (Y)    | N/A |
| Cerium (Ce)     | N/A | Phosphorus (P)    | N/A | Zinc (Zn)      | N/A |
| Cesium (Cs)     | N/A | Platinum (Pt)     | N/A | Zirconium (Zr) | N/A |
| Chromium (Cr)   | N/A | Potassium (K)     | N/A |                |     |
| Cobalt (Co)     | N/A | Praseodymium (Pr) | N/A |                |     |
| Copper (Cu)     | N/A | Rhenium (Re)      | N/A |                |     |
| Dysprosium (Dy) | N/A | Rhodium (Rh)      | N/A |                |     |
| Erbium (Er)     | N/A | Rubidium (Rb)     | N/A |                |     |
| Europium (Eu)   | N/A | Ruthenium (Ru)    | N/A |                |     |
| Gadolinium (Gd) | N/A | Samarium (Sm)     | N/A |                |     |
| Gallium (Ga)    | N/A | Scandium (Sc)     | N/A |                |     |
| Germanium (Ge)  | N/A | Selenium (Se)     | N/A |                |     |
| Gold (Au)       | N/A | Silicon (Si)      | N/A |                |     |
| Hafnium (Hf)    | N/A | Silver (Ag)       | N/A |                |     |
| Holmium (Ho)    | N/A | Sodium (Na)       | N/A |                |     |
| Indium (In)     | N/A | Strontium (Sr)    | N/A |                |     |
| Iridium (Ir)    | N/A | Sulfur (S)        | N/A |                |     |
| Iron (Fe)       | N/A | Tantalum (Ta)     | N/A |                |     |
| Lanthanum (La)  | N/A | Tellurium (Te)    | N/A |                |     |
| Lead (Pb)       | N/A | Terbium (Tb)      | N/A |                |     |
| Lithium (Li)    | N/A | Thallium (Tl)     | N/A |                |     |

| Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Reference           |                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|
| Manganese Standard, 1000 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EPA (200.8)         |                                 |
| Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured. |                     |                                 |
| Part Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Size / Package Type | Shelf Life (Unopened Container) |
| MSMN1KN-100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 100 mL natural LDPE | 18 months                       |
| Recommended Storage: 15°C - 30°C (59°F - 86°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                                 |

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